MNCMAT2

Minnesota Department of Transportation

System Help

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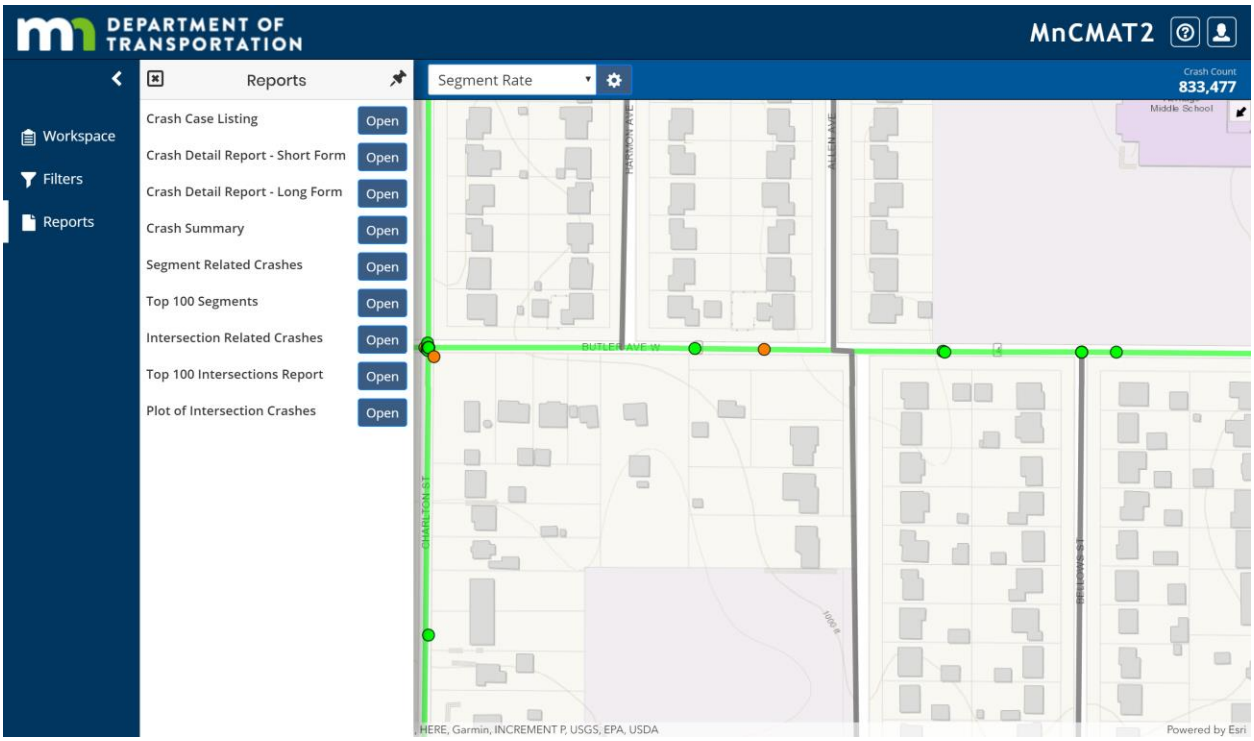
Overview

MnCMAT is an application that provides access to, and mapping, analytic, and reporting capabilities on, historical vehicle crash data to an ever-growing user base of mostly external business partners, particularly county and municipal engineers, across the State of Minnesota. The application directly supports MnDOT's strategic direction to make its transportation network operate better by improving traveler safety. It also supports Minnesota's "Toward Zero Deaths" initiative by providing intuitive access to an easy-to-use tool and reliable, timely data that Local Government Authorities, local law enforcement agencies and other partners need to reduce the number of deaths and injuries resulting from traffic crashes in Minnesota.



MnCMAT Application

User Registration

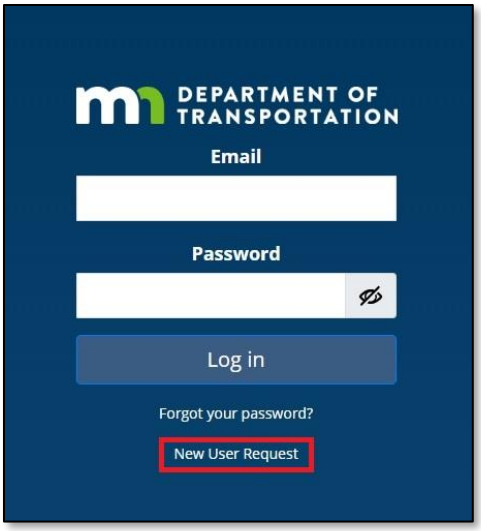
Perform the following actions to access the MnCMAT application and register as a User or Consultant.

The Application URL

Application URL

The Registration Process

1. Enter the required application URL.
2. Click on 'New User Request' on the Login page.



3. Read the New User Information Page, and if in agreement, click the Proceed button.
4. Read the Register a New Account page, and if in agreement, click the Proceed button.
5. Fill out all the information on this page, choosing User or Consultant as the Account Type
6. Securely store your chosen password or choose a password that you can remember easily, as it might be several days before receiving approval.
7. Click the Register button.
8. Wait for an email notification of Approval from MnDOT.
9. Upon receiving an email approval, open the application with the above URL or through a link in the email.

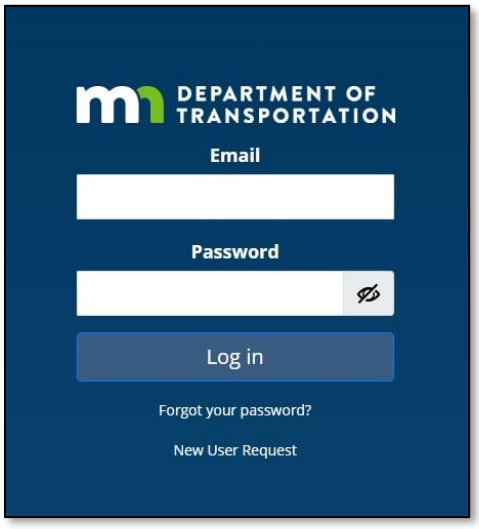
Quick Start

The remainder of this document lists detailed instructions for using all aspects of the application. This Quick Start section is intended to be a brief introduction to the application.

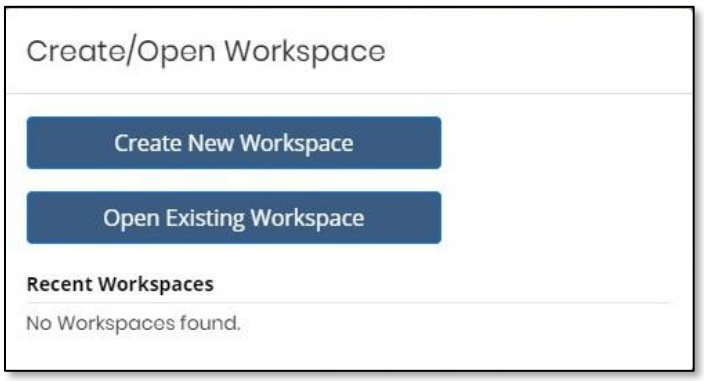
Log In

Enter the required application URL.

Enter your email and password and click the Log in button. This launches the MnCMAT application.

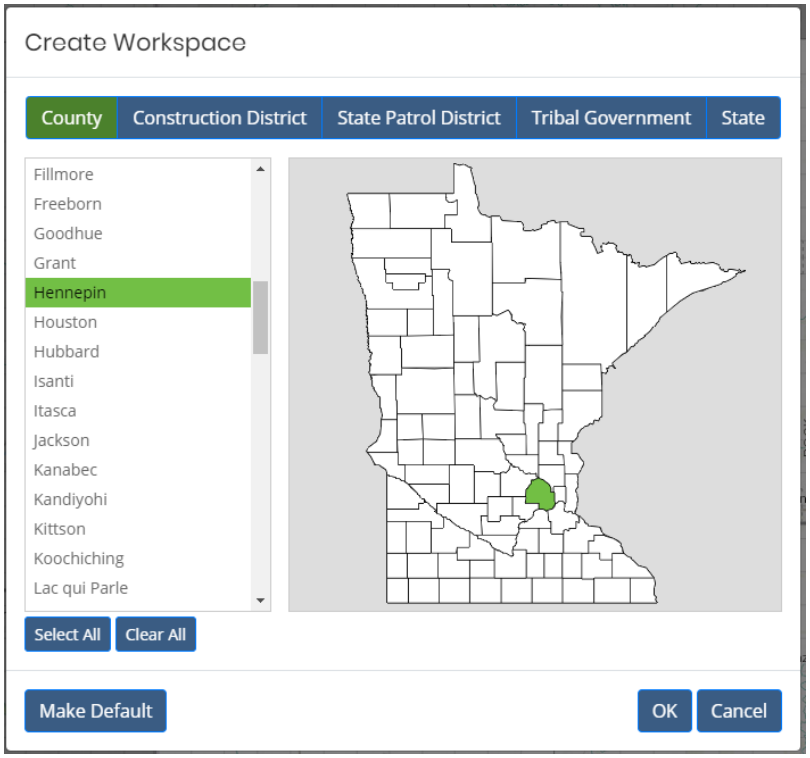


Since there are not yet any Workspaces created, click Create New Workspace in the Create/Open Workspace dialog.

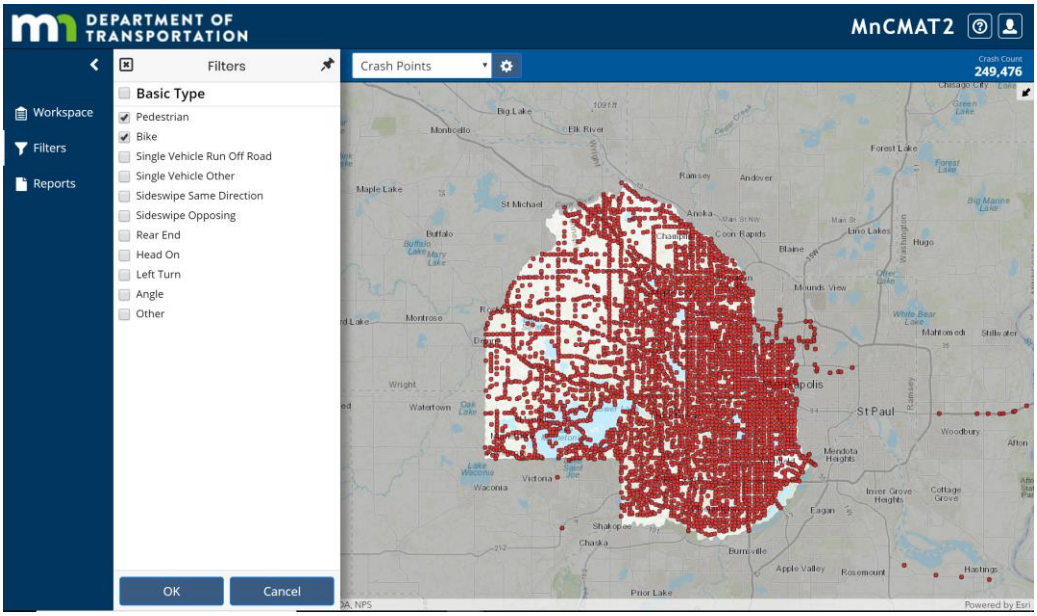


Create New Workspace defaults to State.

Click on the County tab. Select the desired County from the list or click it on the map. Click OK.

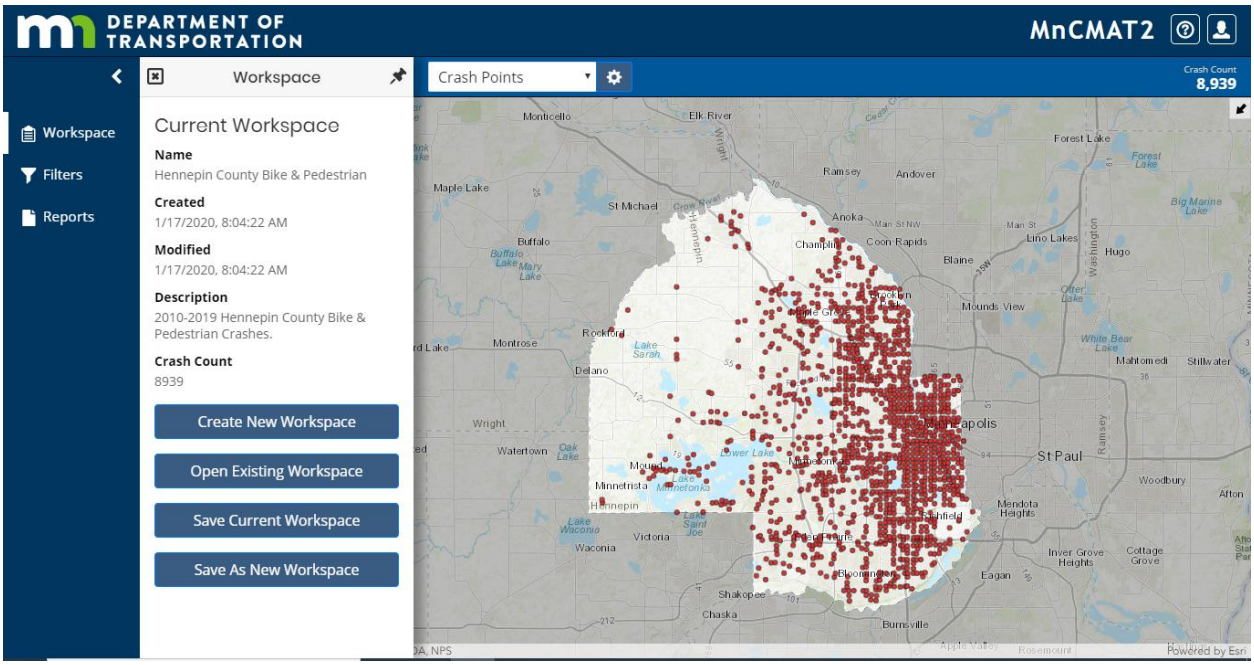


Open Filters. Choose Basic Type. Check Pedestrian and Bike from the List. Click OK.



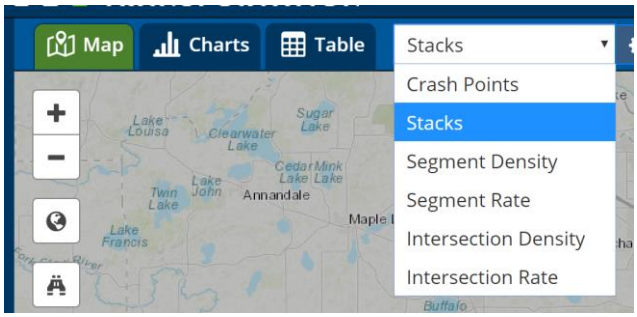
Pan and Zoom around in the map, using the map navigation tools.

Save the current Workspace, naming it and optionally giving a description.

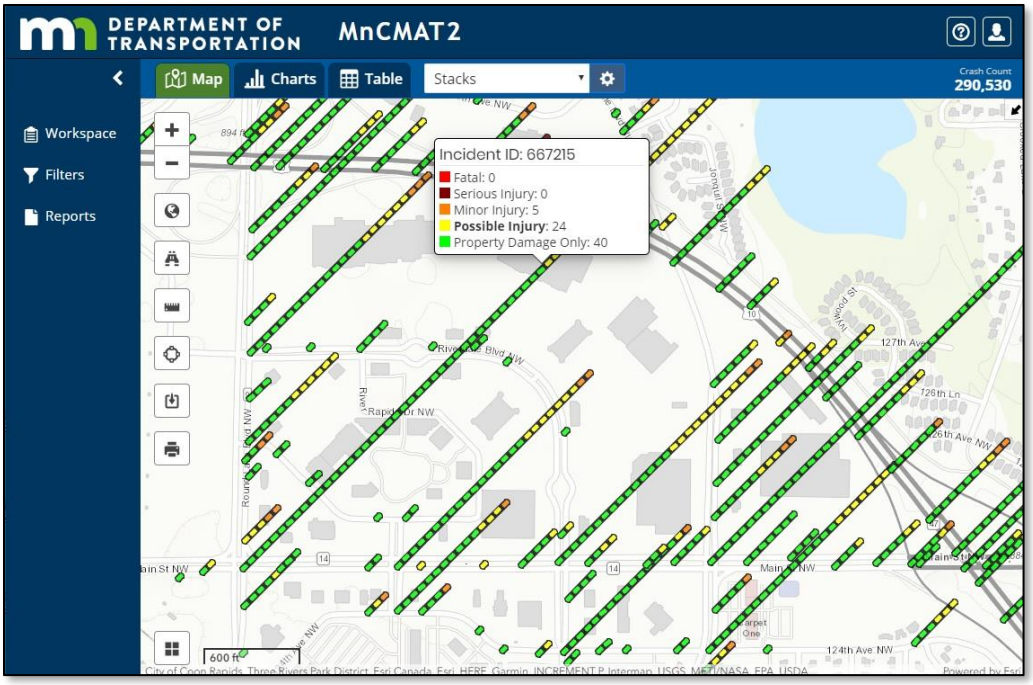


View Stacks

Click the Map Visualizations selector drop down list, and choose Stacks.

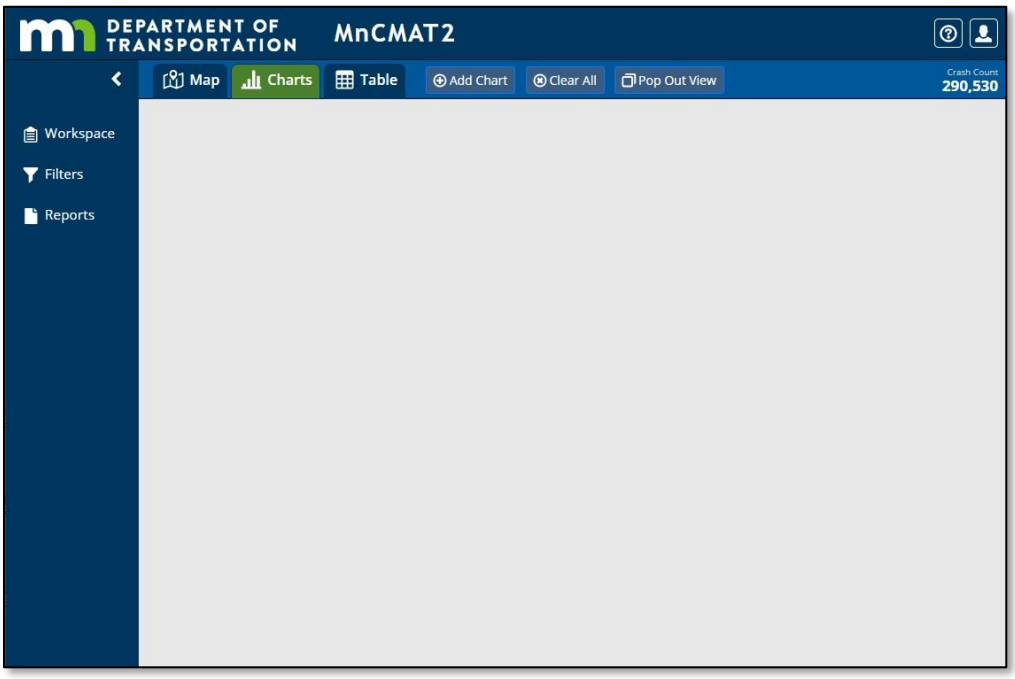


Zoom in to an intersection and zoom in until Stacks appear. Hover over the Stacks to get individual crash details.

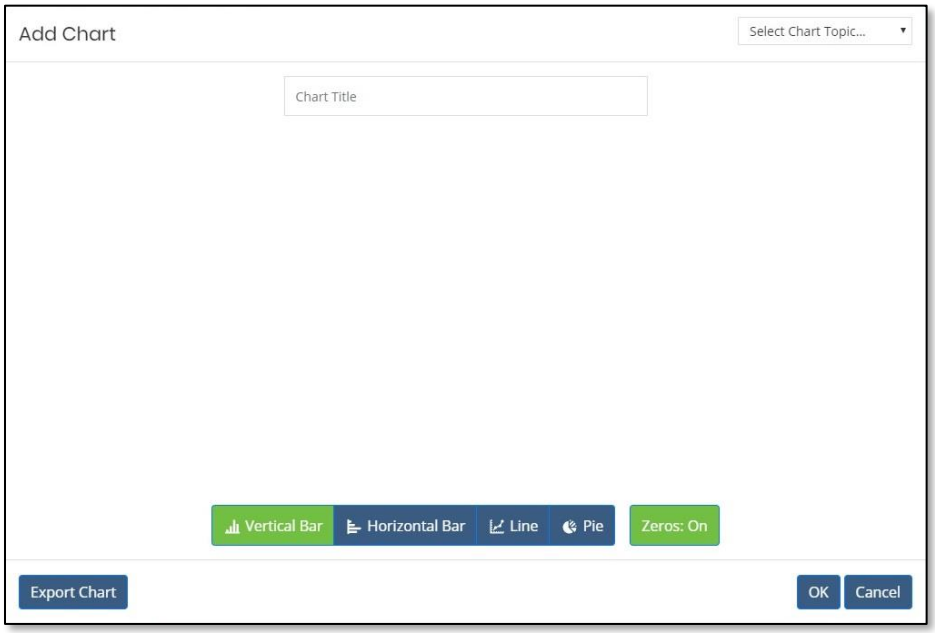

DEPARTMENT OF TRANSPORTATION
MnCMAT2
Map
Charts
Table
Stacks
Crash Count
290,530
Workspace
Filters
Reports
Incident ID: 667215
Fatal: 0
Serious Injury: 0
Minor Injury: 5
Possible Injury: 24
Property Damage Only: 40
Rivers Edge Blvd NW
Rapids Dr NW
127th Ave
726th Ln
125th Ave NW
Main St NW
124th Ave NW
600 ft

View Charts

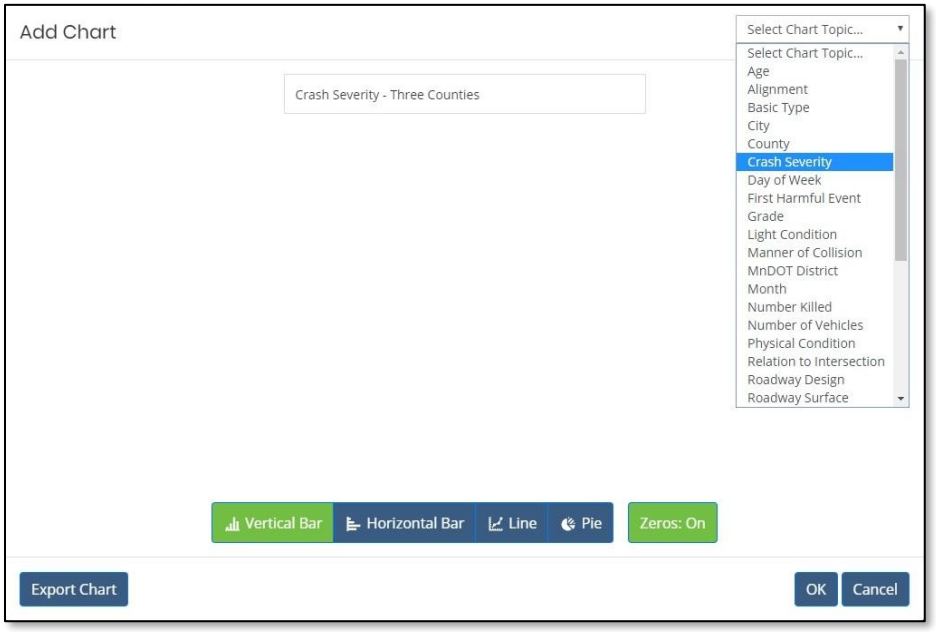
Click the Charts tab in the top toolbar.



Click Add Chart in the top toolbar to view the Add Chart dialog.



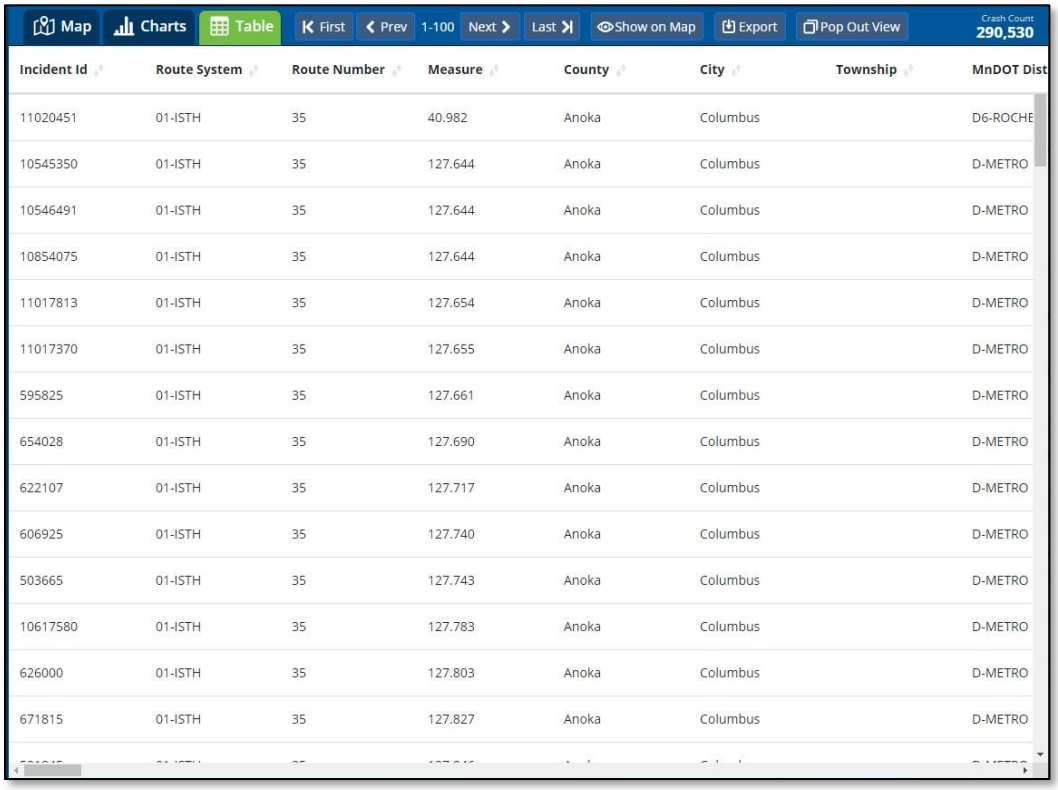
Click Select Chart Topic in the upper right and select Crash Severity.



Cycle through the Chart types in the bottom bar and click Export Chart to save a local copy. Click OK to save the Chart to your session and try adding additional Charts.

View the Table

Back at the main screen, click the Table Tab. The table view is a tabular view of the current set of data and reflects any applied filters. Use the navigation buttons at the top to step through each page of data. Selecting a record and clicking Show on Map will bring up the Map view with the record briefly highlighted with a flashing symbol. As with Charts, you can also Export the Table.



Incident Id	Route System	Route Number	Measure	County	City	Township	MnDOT Dist
11020451	01-ISTH	35	40.982	Anoka	Columbus		D6-ROCHE
10545350	01-ISTH	35	127.644	Anoka	Columbus		D-METRO
10546491	01-ISTH	35	127.644	Anoka	Columbus		D-METRO
10854075	01-ISTH	35	127.644	Anoka	Columbus		D-METRO
11017813	01-ISTH	35	127.654	Anoka	Columbus		D-METRO
11017370	01-ISTH	35	127.655	Anoka	Columbus		D-METRO
595825	01-ISTH	35	127.661	Anoka	Columbus		D-METRO
654028	01-ISTH	35	127.690	Anoka	Columbus		D-METRO
622107	01-ISTH	35	127.717	Anoka	Columbus		D-METRO
606925	01-ISTH	35	127.740	Anoka	Columbus		D-METRO
503665	01-ISTH	35	127.743	Anoka	Columbus		D-METRO
10617580	01-ISTH	35	127.783	Anoka	Columbus		D-METRO
626000	01-ISTH	35	127.803	Anoka	Columbus		D-METRO
671815	01-ISTH	35	127.827	Anoka	Columbus		D-METRO

Print a Map

Back at the Map view, click on the Printer icon to print out the map, from which a PDF can be generated.

Log Out

To log out of the application, click the User icon in the upper right and choose the Logout menu item.

High Level Description of the Application Interface

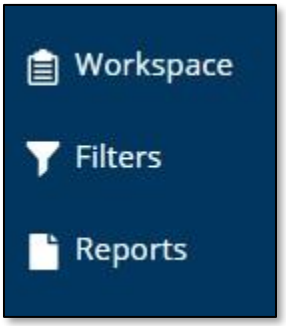
The main components of the interface are:

The Application Header

The Application Header runs across the top of the main page, and includes the title and logo, and the Help and Account menus.

The Application Tabs

The left panel of the application includes tabs used to set the Workspace, manage Filters, and create Reports.

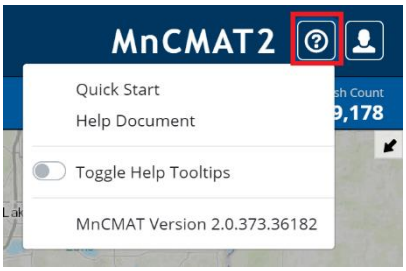


The Application Views

The Application Views are just below the Application Header and to the right of the Application Tabs. These Views include: the Map View, where the map can be viewed and navigated; the Charts View, where charts can be created and viewed; and the Table View, where tabular results of the current data can be viewed.

Help

Clicking the Help button in the application displays the Help Menu and options.



Quick Start

Clicking the Help drop down menu and then clicking Quick Start will open the Help Document to the Quick Start section, ideal for new users.

Help Document

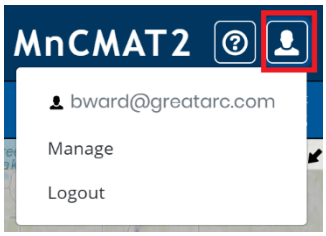
Clicking the Help drop down menu and then clicking the Help Document menu item will load the complete Help Document.

Toggle Help

The Toggle Help Tooltips menu item allows users to set tooltip help on or off in the application. Turning it on is especially useful for new users.

Account

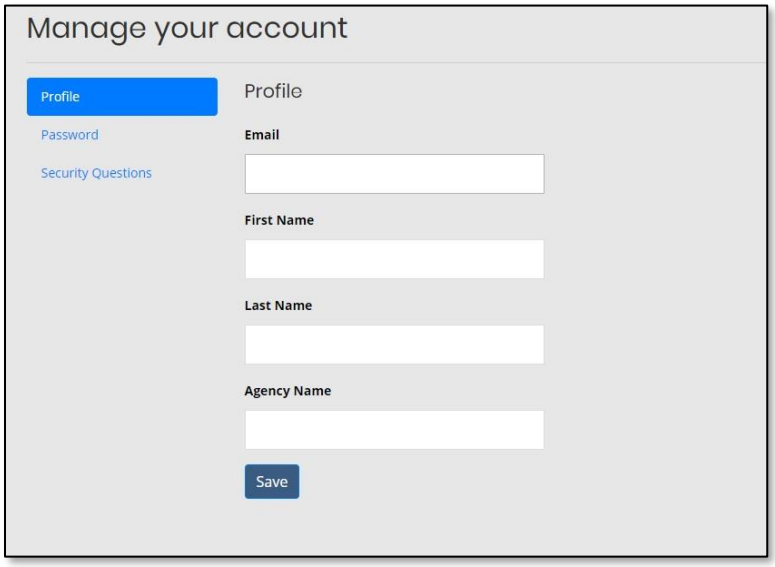
Clicking the Account button displays the Account Menu and options.



Manage

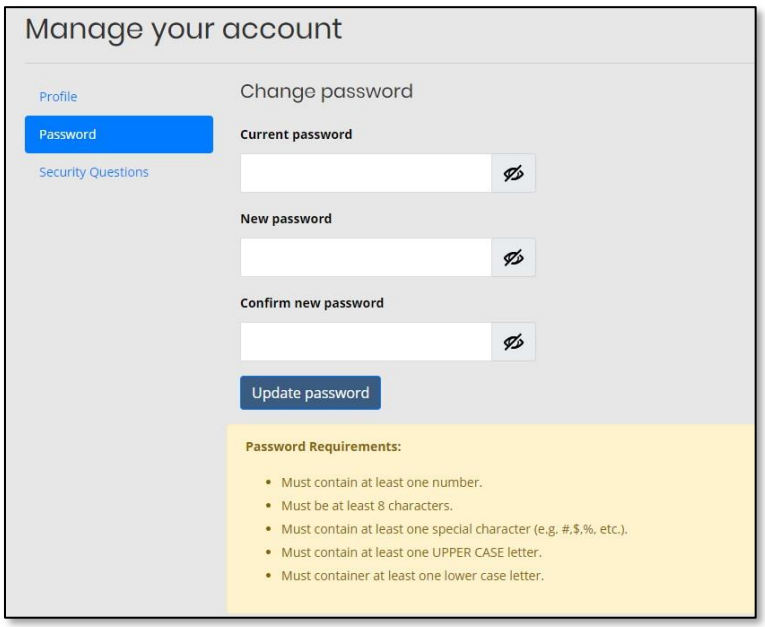
Profile

Clicking the Account button and then Manage launches the account management tool in a new tab, set to the Profile tab. This is where the user can set Name, email and agency. When finished editing, click Save to save the changes.



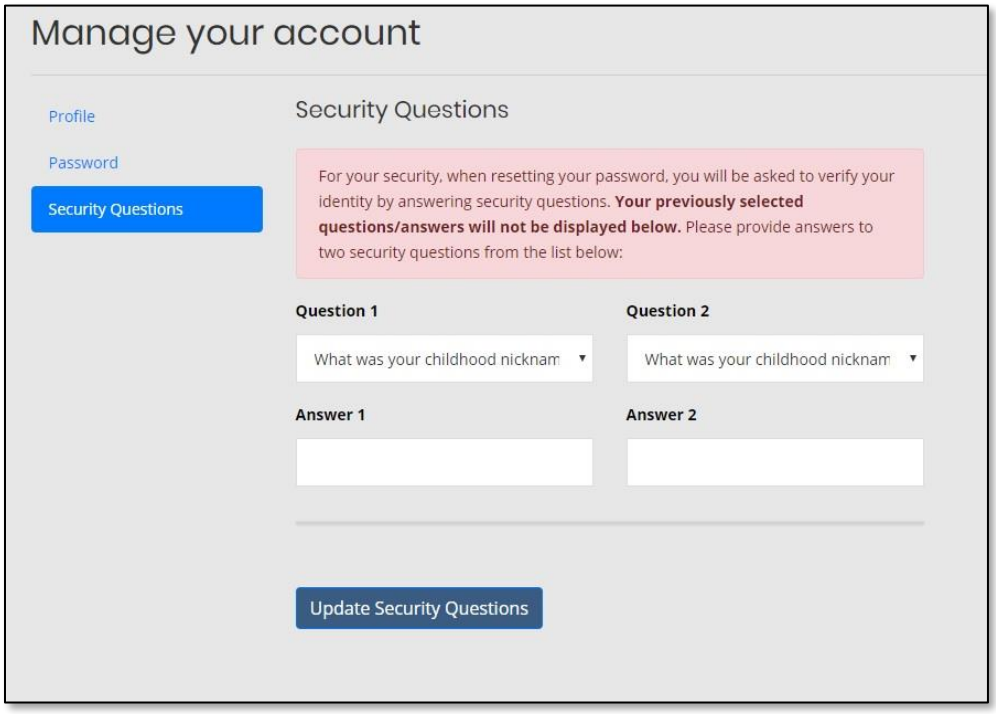
Password

Under the Password tab, users can change their password. Note the requirements listed at the bottom of the page. Click Update Password to save the changes.



Security Questions

Users set and update their security questions on this tab. When finished choosing questions and keying in answers, click the Update Security Questions to save changes.

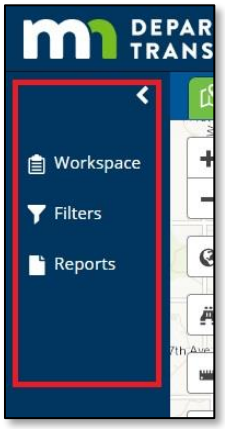


Logout

Click Logout to leave the site. This will raise an information dialog warning that changes might not be saved. Clicking Leave will log out of the application.

Application Tabs

The Application Tabs are arranged in the left panel of the application. That panel can be minimized by clicking the left-pointing arrow in the upper right to only show icons or maximized to also show the descriptions of each.

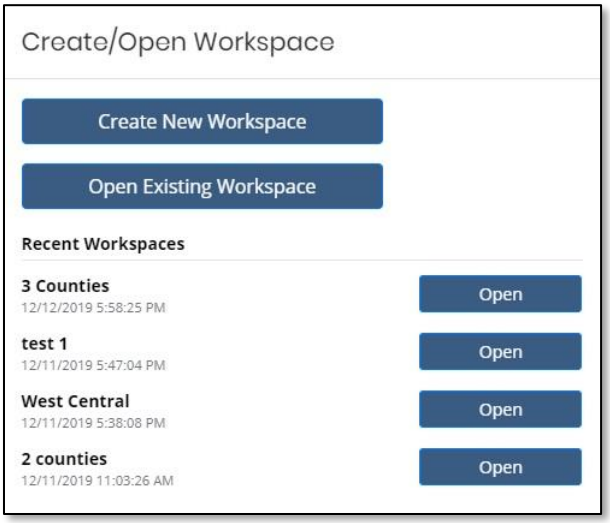


Pin and Close Tabs

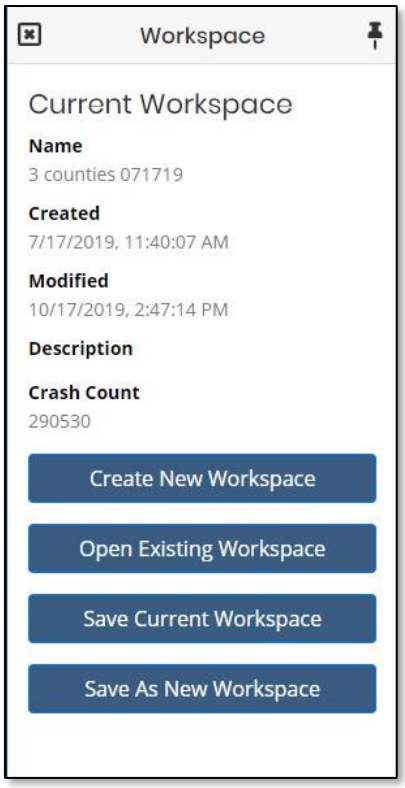
When one of the tabs is clicked, it opens to the right. The open tab can be closed by clicking the 'X' button in the upper left or pinned in place by clicking the Pin button in the upper right. Note that pinning adjusts the extent of the current View (Map, Chart or Table) to fit between the pinned tab and the right border of the application. Un-pinned, the tab overlays the left portion of the View.

Workspace

A Workspace is required to work within the application. A Workspace is comprised of the geographic area of interest, any applied location or attribute filters, and user settings and preferences. Upon entering the application where you had previously saved Workspaces, you will be presented with this dialog:



While working in the application, click the Workspace tab to open the Workspace dialog in order to Create New, Edit, Save, or Save Workspace as a new Workspace.

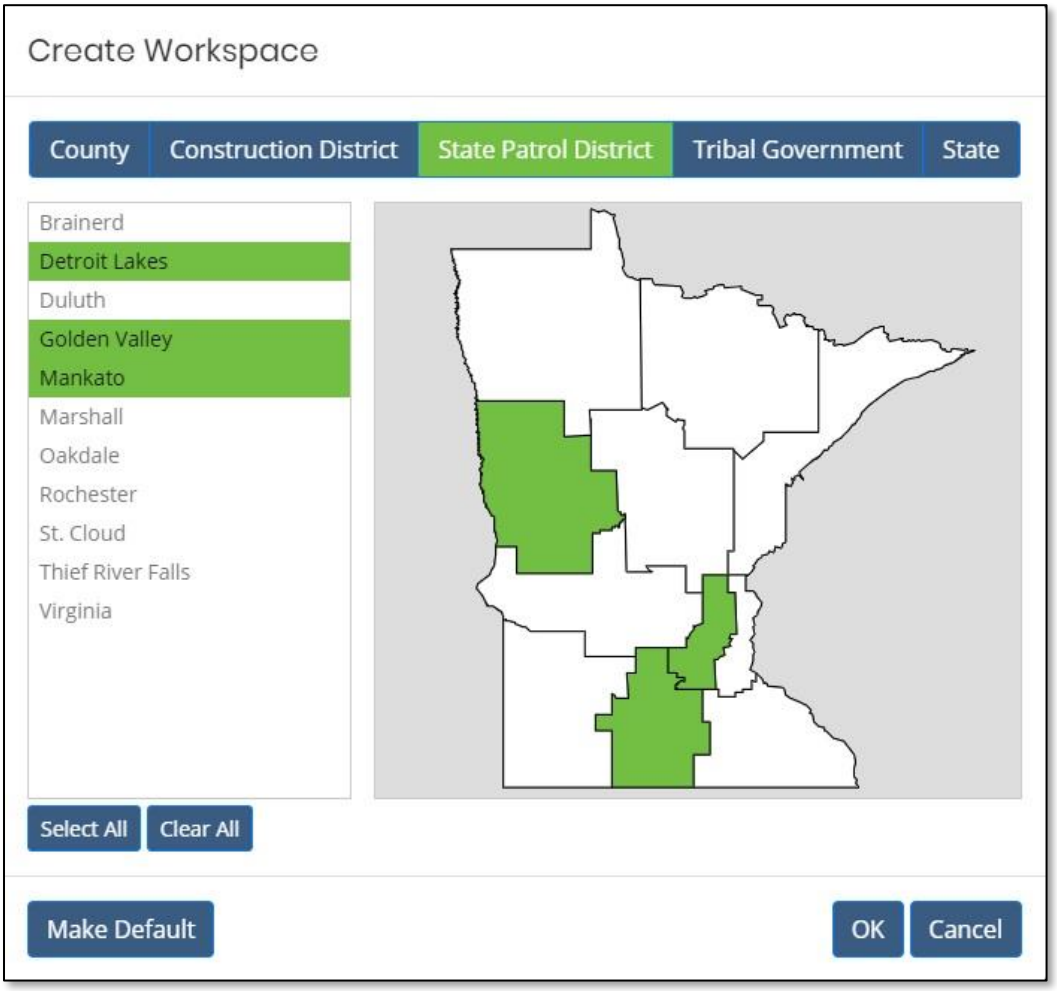


Create New Workspace

County, Construction District, State Patrol District, Tribal Government, State

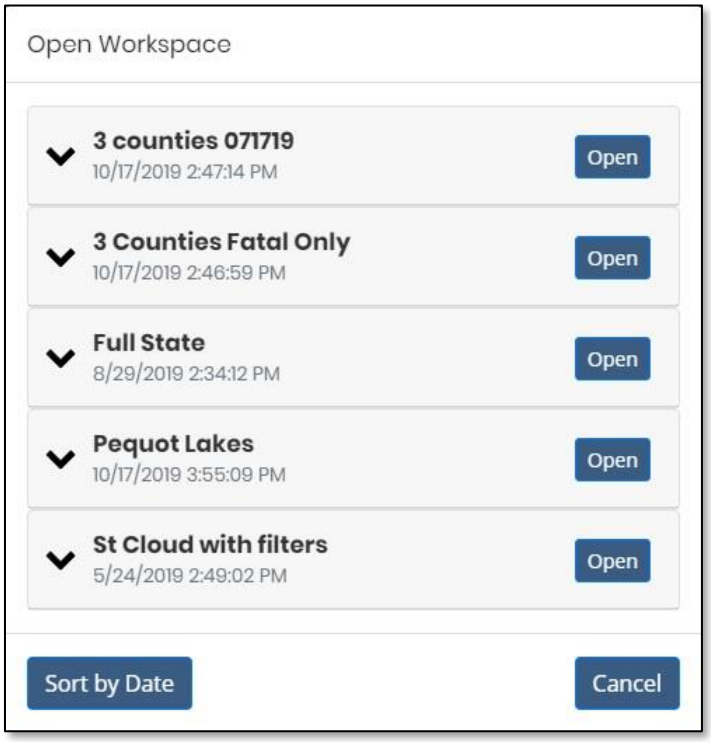
Clicking the Create New Workspace button opens the Create Workspace dialog. Users can choose County, Construction District, State Patrol District, Tribal Government or State categories. Once the category tab is selected, the user can choose one or more of the geographic areas either in the list or by clicking on the map. Clicking a selected item de-selects it.

The user can click Select All or Clear all to manage selections. User can click Make Default to have this Workspace category and geography selection become the default selection whenever Create New Workspace is selected.



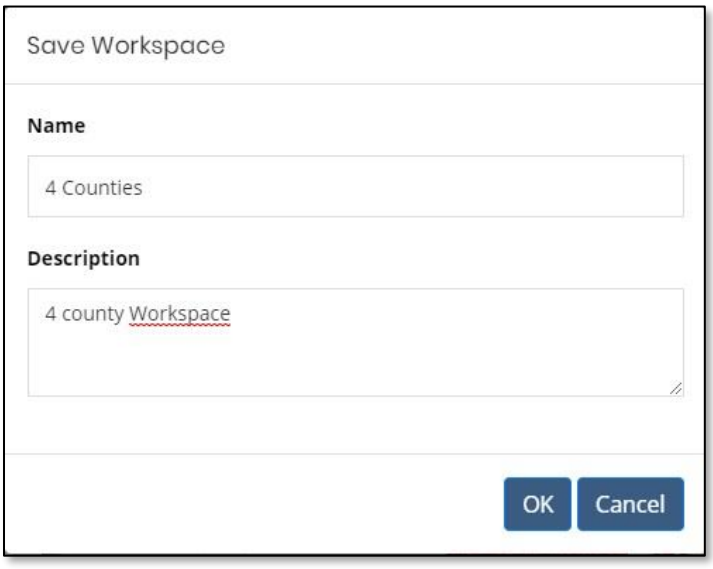
Open Existing Workspace

Clicking Open Existing Workspace opens the Open Workspace dialog. This is a list of previously created and saved Workspaces. Clicking the Open button opens that Workspace. Clicking the down arrow on any of the Workspaces in the list will display details of the Workspace and allow the user to delete it. Click the up arrow to return to the Workspace list. Click Sort by Date or Sort by Name to resort the list.



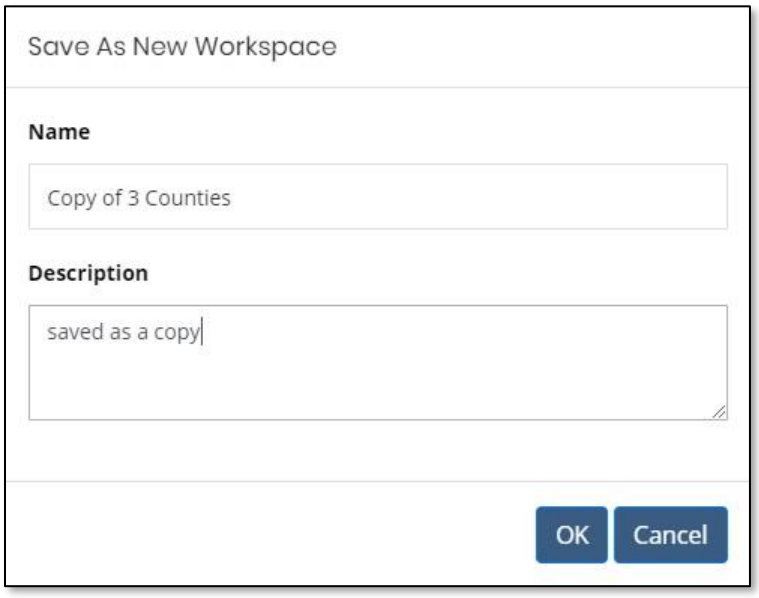
Save Current Workspace

Click Save Current Workspace to save the active Workspace. A brief notification will be displayed.



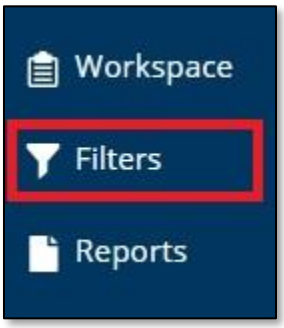
Save as New Workspace

Click Save as New Workspace to create a copy of the current state of the application. This will save the map extent, filters, symbology, etc., and present a dialog for the user to enter a new name and description.



Filters

Click the Filters Application Tab in the left panel to open the Filter List. Applying filters to the current selection of crash points will limit the selection by those specified locations or attributes.



Filter List

The filter list is organized by Location Filters, such as City or County, and Attribute Filters, such as Crash Severity and Day of Week. Use the scroll bar to access the full list.

Clicking on a filter category will bring up a list of options (or ranges) to select from. The options can be clicked once to select, or again to de-select. Click OK to accept or Cancel to go back to the main list. Filter categories with selected options will show a green badge with the number of options selected, or

in the case of a date, the date or range. A Clear button will also then display, allowing the user to click that Clear button as a shortcut to remove all those filter options.

For the Location-based Filters, County and City attributes were assigned ty the officer that entered the crash into the system. The MnDOT District, State Patrol District, and Tribal Government Location-based filters were created by performing a spatial overlay of the data in GIS software to make the assignments.

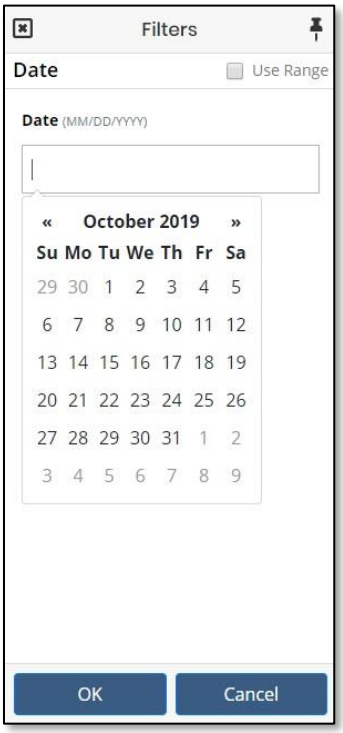
Filter Options

Check List

Most filter options are of the Check List type, where options can be selected by clicking the check box, and de-selected by checking it again. One or more options can be selected. To quickly select or de-select all, click the check box next to the Filter name.

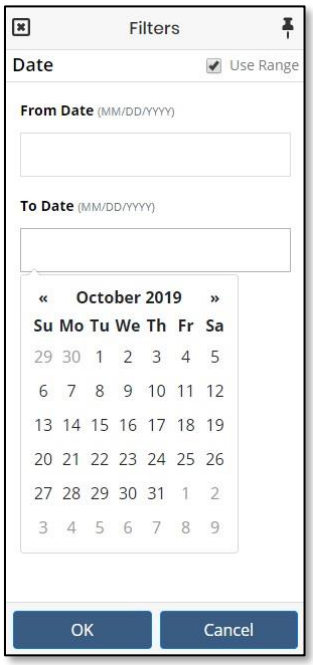
Date Filter

Clicking on the text entry box of a Date type of filter opens a date picker. Select the date from the date picker, or simply key in the date in MM/DD/YYYY format.



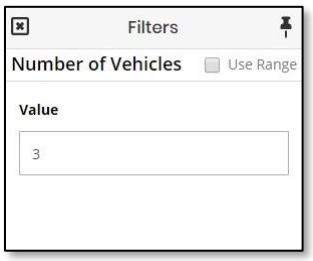
Date Ranges

To specify a date range, click the Use Range check box and enter From and To dates in the 2 entry boxes.



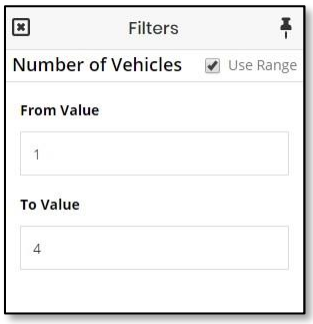
Number Filters

For Number type filters, simple type in the desired number.



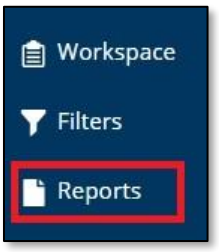
Numeric ranges

For Numeric ranges, click the Use Range check box and enter a From and To range in the entry boxes.

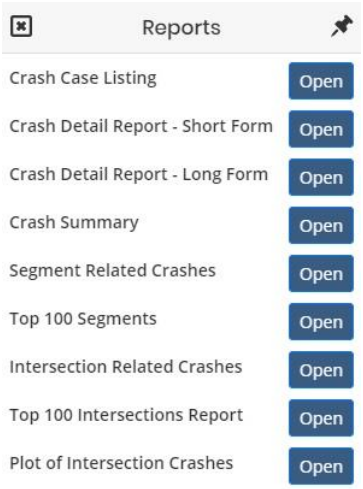


Reports

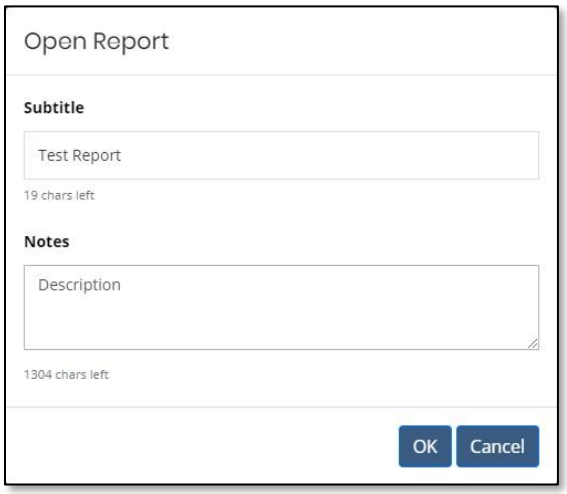
Click the Reports Application Tab in the left panel to open the Reports List.



Click on the Open button to launch a report. If there is not a Crash Count limit, the user will be presented with the Open Report dialog.



Key in a title and description and click OK. The report will be generated and presented in a new tab. Click the Generate PDF. Then Download PDF to save to the default browser download folder.



Report Limits

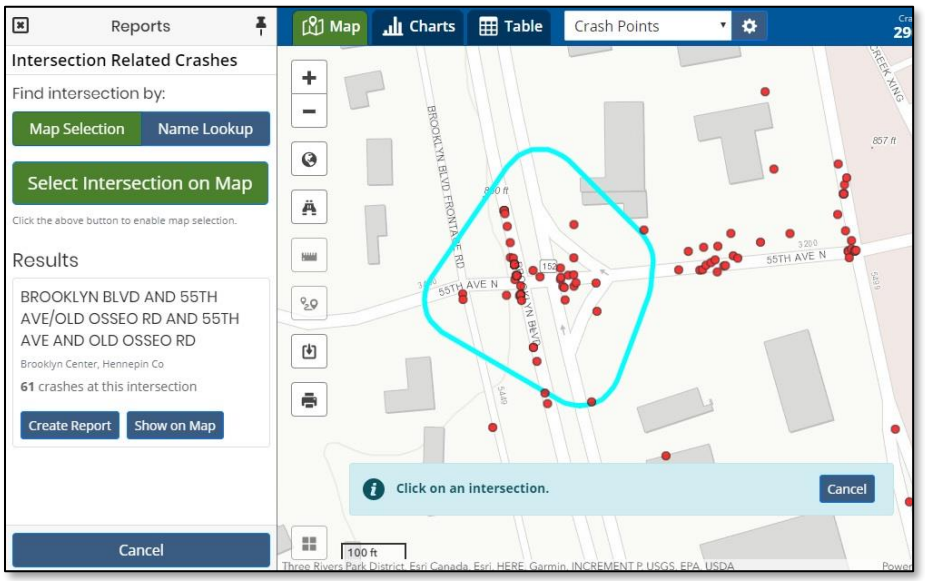
Depending on the selected report, if the current selection (Crash Count) is greater that the number allowed to process for that report, the system will display an Information dialog that the selection will need to be further reduced in order to run the report.

Intersection Reports

The Intersection Related Crashes and Plot of Intersection Crashes require the user to select an intersection, either through a Map Selection or a Name Lookup.

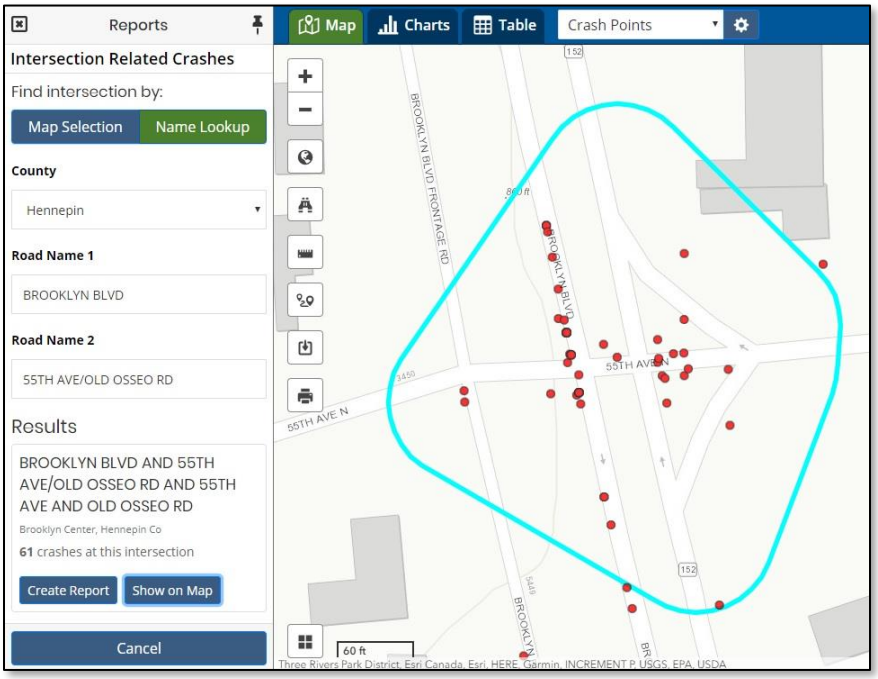
Map Selection

Click Map Selection, then Select Intersection on Map to activate selecting the intersection from the map. Once an intersection is clicked, the result will appear in the dialog. Click Create Report to follow the normal report creation steps. Click Show on Map to zoom to that intersection.



Name Lookup

Find the intersection by using a street name lookup. Click Name Lookup, choose the County, then start keying in the Road Names 1 and 2. The names will auto-fill. Upon finishing keying in the names, a found intersection will be displayed in the list. Follow the steps for Creating a Report or Showing on Map.

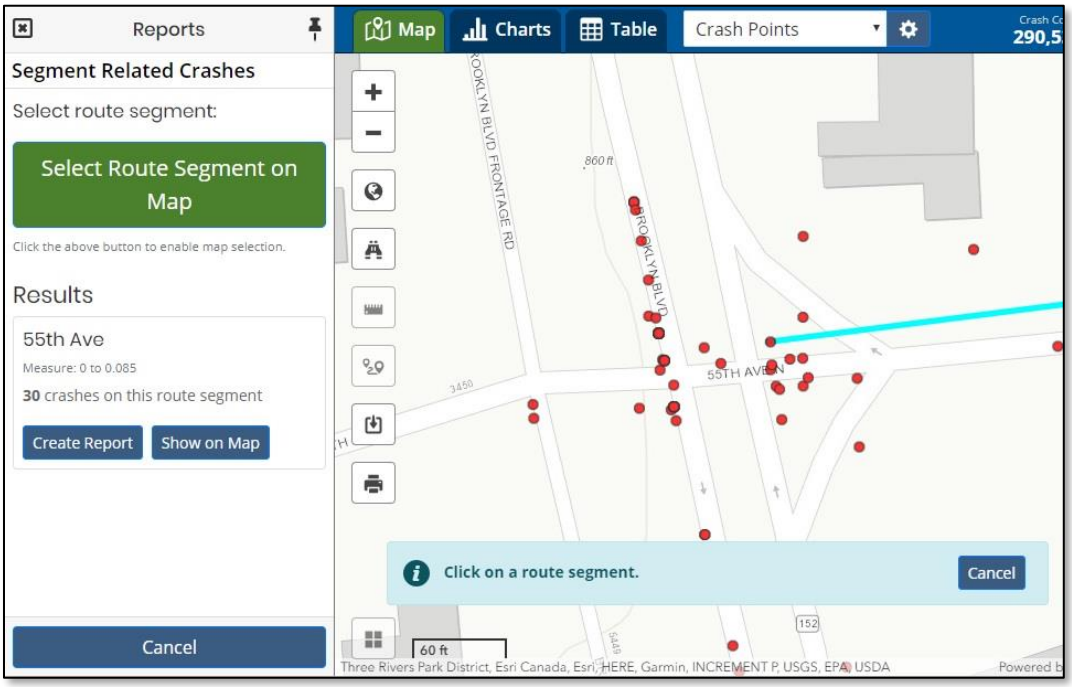


Note that the street names (Road Name 1 and Road Name 2) are derived from the data that was generated as part of the Intersection Polygon provided by MnDOT. In order to find a street name, and exact match is necessary.

Route Report

The Segment Related Crash report requires the user to select a route on the map.

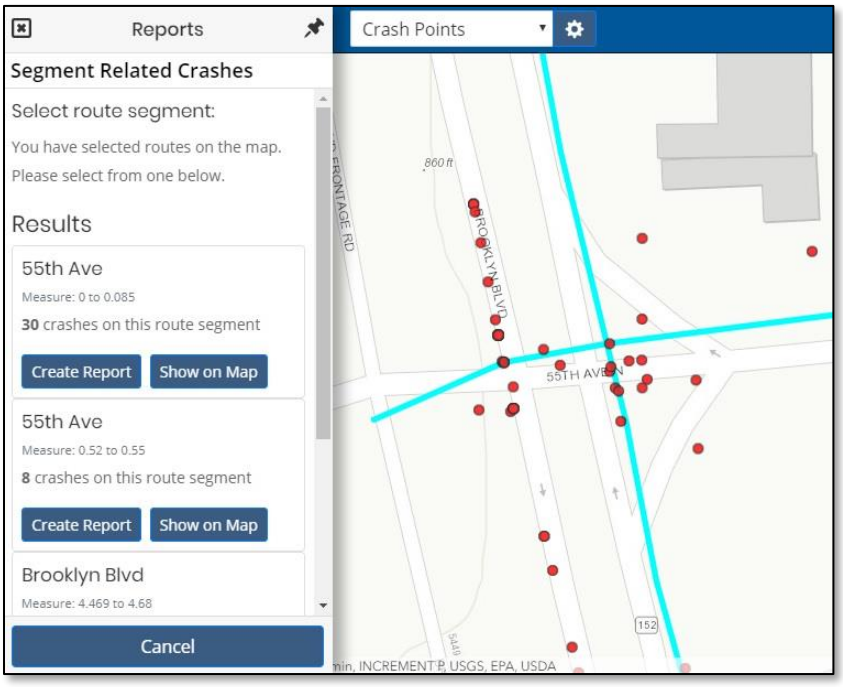
Map Selection



Like Map Selection in the Intersection related reports, click Select Route Segment on Map. Click the desired road segment on the map. Options will be presented for Creating a Report and Showing on Map.

Use Existing Route Selection

If multiple route segments have previously been selected before opening the Segment Related Crashes report, those multiple road segment results will be listed in the report dialog. In this case, the user can Show on Map for each to see the location, and individually Create Reports for one or more records in the list.



Application Views

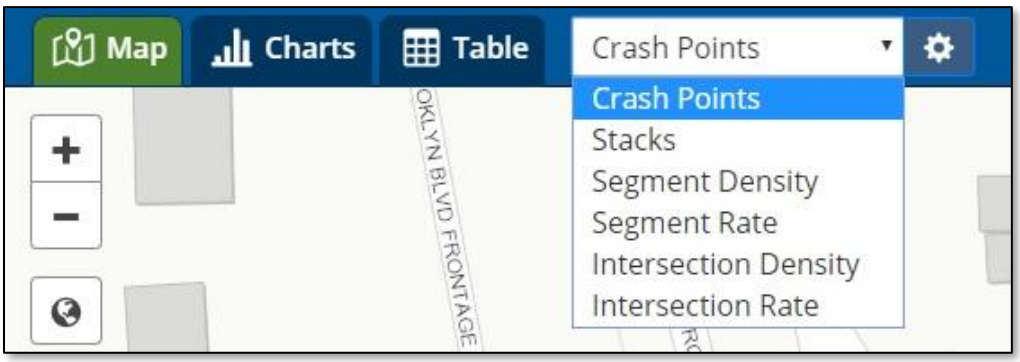
The main portion of the application is where the map and data is visualized, either in a Map View, Charts View, or Table View. Each can be accessed by clicking the Map, Charts, or Table tabs.

Map View

Click the Map button will display the Map in the Application.

Map Visualizations

Clicking each of the items in the Map Visualizations list will update the map display for that data type. Note that some of these visualizations will require being zoomed in to the map in order to display.

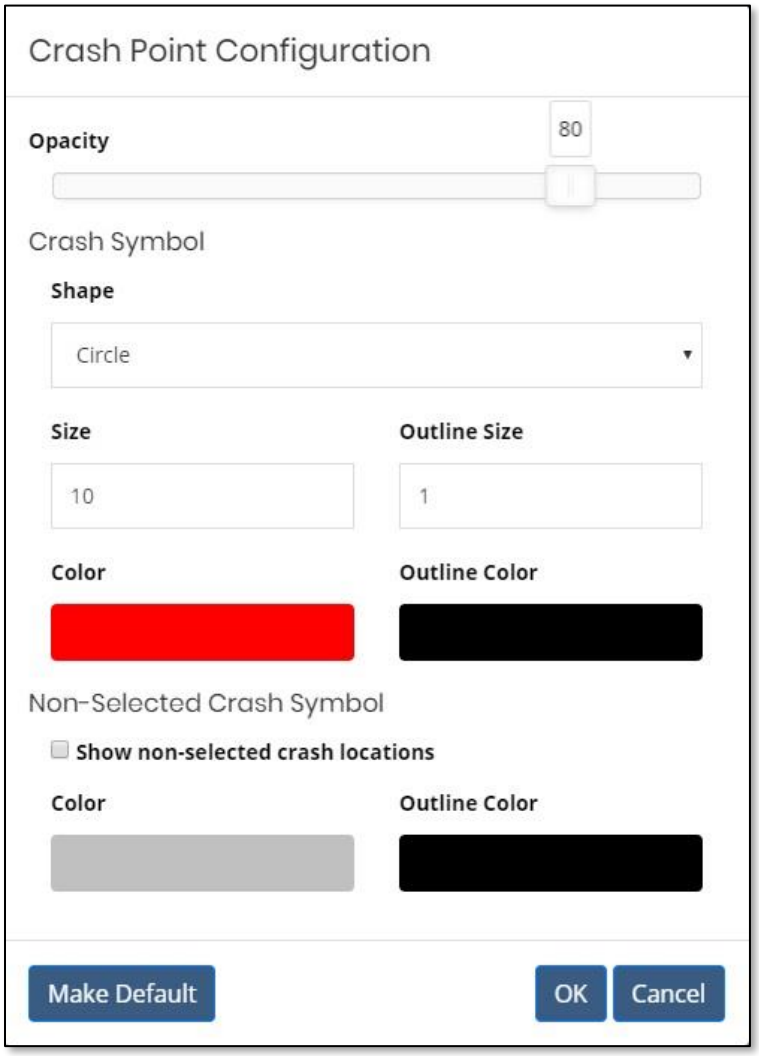


Configuration

For each of the visualizations, the Configuration gear can be clicked to bring up the settings specific to that visualization. For each configuration dialog, clicking Make Default will save these settings with the Workspace.

Crash Point

This visualization displays crash points per selections and filters, with symbology per the settings in the Crash Point Configuration dialog.

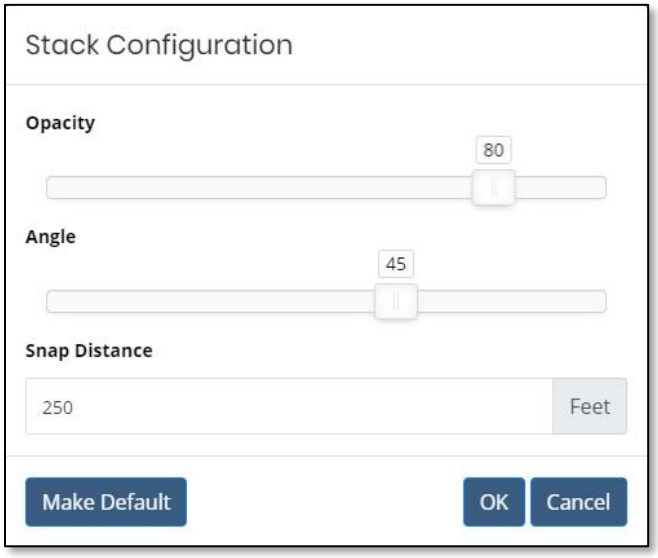


Users can set Opacity (the transparency level of the symbol), the symbol shape, size, outline size, color, and outline color. In addition, non-selected crashes can be displayed in the map by checking the "Show non-selected crash locations" check box. Colors for the non-selected crashes can be set as well.

Stack

This visualization shows crashes grouped by location, and drawn to appear stacked vertically up from the map. Mouse hover over the individual crashes on the stacks to get details. The stack display is per the Stack Configuration dialog.

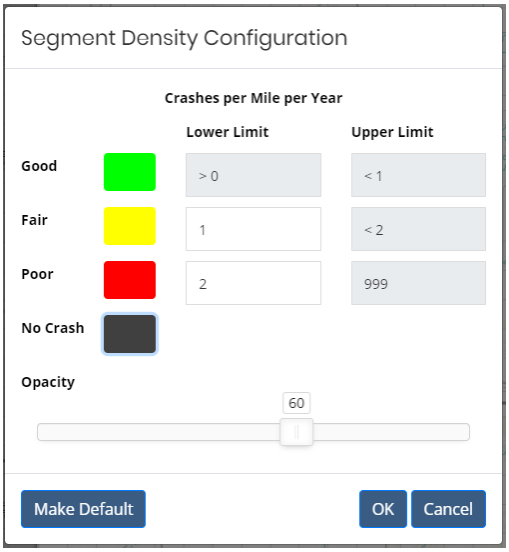
Settings here include opacity, angle, and snap distance (for grouping crashes into stacks).



Note that Stacks are generated first by grouping all crashes by intersection polygon as single stacks. The remaining crashes are grouped by road segments. For each road segment, the minimum and maximum measures are pulled from the related crash data as a measure range between the first and last crash point. That measure range is then divided by the snap distance specified by the user and then rounded to determine the total number of stacks for the segment. The measure range is then subdivided into equal length groups for the number of stacks. Crashes are then assigned to each of the stack groups based on their measure.

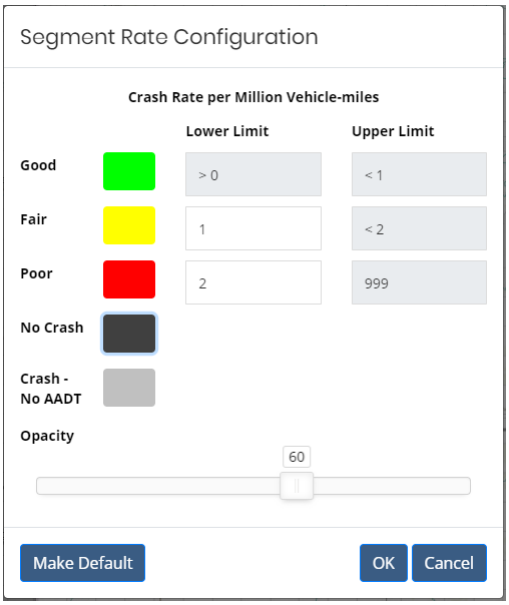
Route Segment Density

This visualization symbolizes the routes based on the density of crashes. Mouse hover over the individual routes to get details In this configuration dialog, set range colors and values, color for segments with no crashes, and opacity of the symbology.



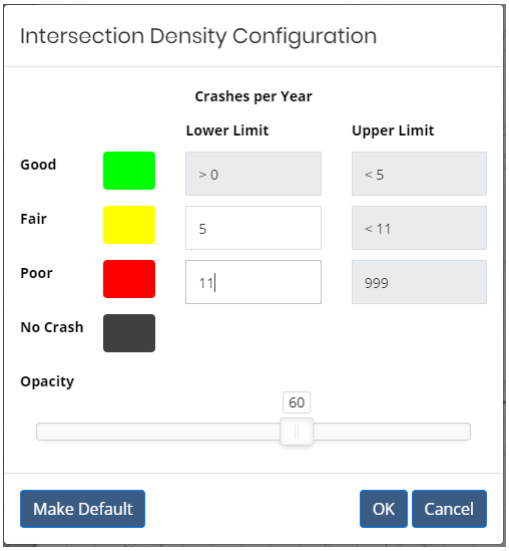
Route Segment Rate

This visualization symbolizes the routes based on the crash rates. Mouse hover over the individual routes to get details. In this configuration dialog, set range colors and values, color for segments with no crashes, color for segments with no AADT data, and opacity of the symbology.



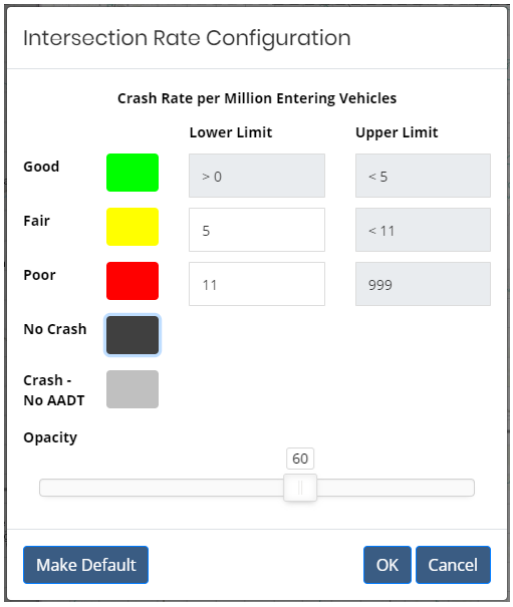
Intersection Density

This visualization symbolizes intersections based on the density of crashes. Mouse hover over the individual intersections to get details. In this configuration dialog, set range colors and values, color for intersections with no crashes, and opacity of the symbology.



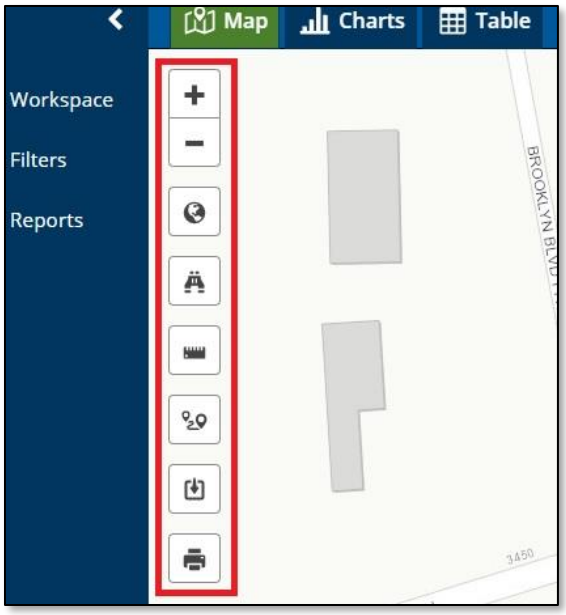
Intersection Rate

This visualization symbolizes the intersections based on the crash rates. Mouse hover over the individual intersections to get details. In this configuration dialog, set range colors and values, color for intersections with no crashes, color for intersections with no AADT data, and opacity of the symbology.



Map Tools

The map tools are the buttons that appear on the map itself within the Application.



Map Navigation

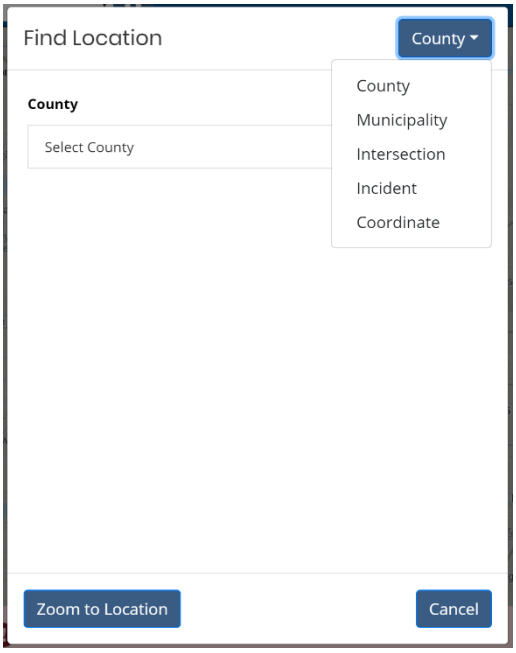
These tools enable navigation of the map, including Zoom In, Zoom Out, Zoom Extent, Zoom Previous, Zoom Next, Default Pan, Scroll Wheel Zoom.

The plus and minus represent Zoom In and Zoom Out, the globe represents Zoom Extent, and the arrows represent Zoom Previous and Zoom Next. In addition, Pan is enabled by default, and zooming in and out can also be accomplished using the mouse scroll wheel.

Find Location

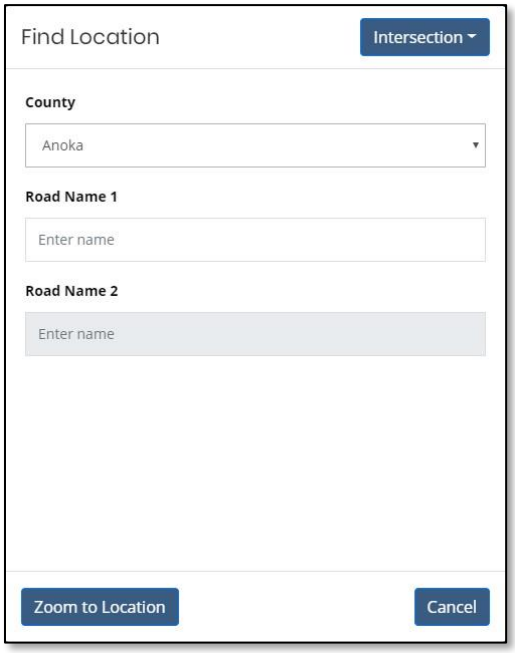
Selecting this button will launch the Find Location dialog.

Clicking the drop-down list in the upper right will let the user choose from County, Municipality, Intersection, Incident and Coordinate.



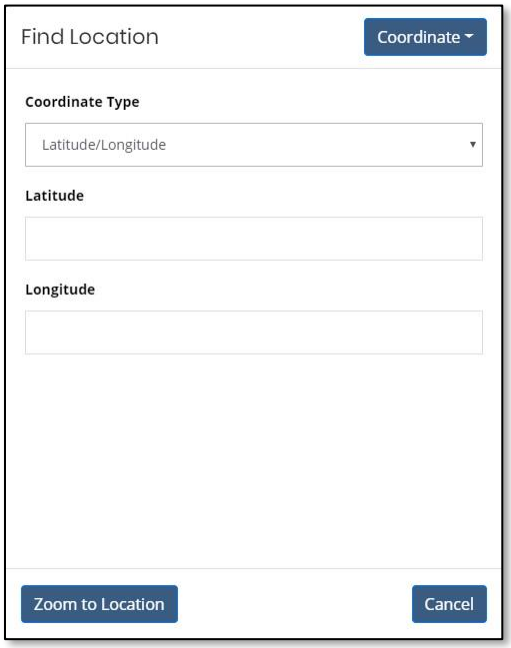
County and Municipality are simple lists to choose from. Note that the cities listed are those that are attributed (correctly or incorrectly) to at least one crash in your workspace.

Intersection requires first the selection of a County, then the 2 road names. The road names are auto-fill enabled.



Incident requires an exact incident ID to be entered.

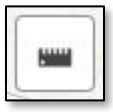
For Coordinate, the user must first select the coordinate type, then the latitude and longitude.



In all cases, the Zoom to Location button is then clicked to zoom to the chosen location, where the feature will be briefly highlighted with a flashing symbology.

Measure Distance

Clicking this button enables the Measure tool.



With the measure tool enabled, continue to click on the map to see the current and cumulative distances. To finish, double click on the map.

Selection Tools

Overview

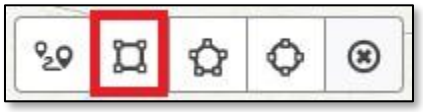
Hovering over the current Selection tool brings up the full menu of Selection tools. All tools are active only for a single action, except for the Select Route Segment tool, which remains active to allow the selection of multiple segments. To stop the selection, click the Select Route Segment button again.

Select by Route Segment

Click on the map to select route segments. To select more than one, hold down the Ctrl key.

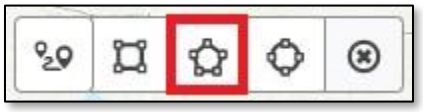
Select by Rectangle

Click and drag a rectangle on the map for this selection type.



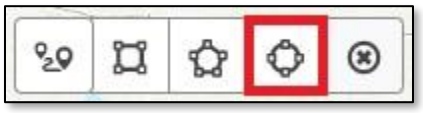
Select by Polygon

Click the map at each desired vertex of the polygon. To complete the polygon, double click the last vertex.



Select by Radius

Click the map at the desired center of the circle, and drag the desired circle radius. Release the mouse button to complete the circle.



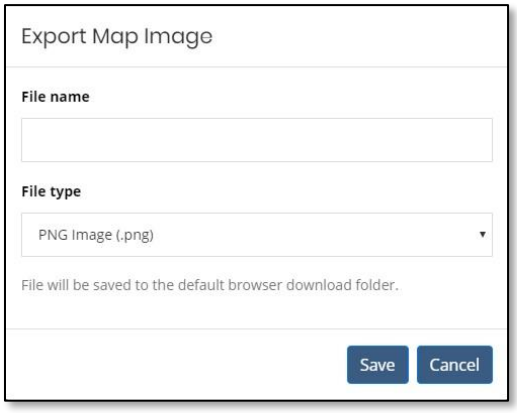
Clear Selection

This will clear all map selections that were drawn using this tool.

Export Map

Click this button to open the Export Map Image dialog.

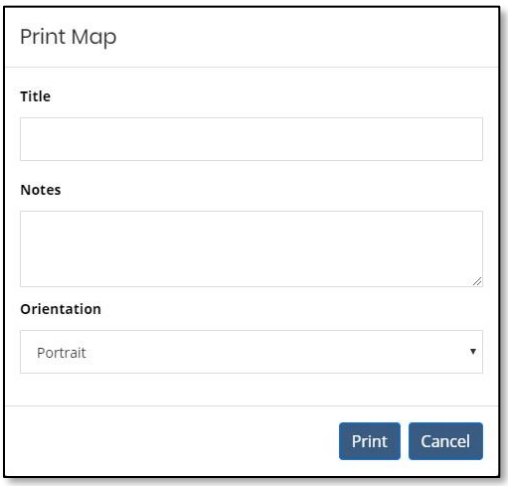
Enter a file name, choose file type of JPG or PNG, and click Save. The map image will be saved to the default browser download location.



Print Map

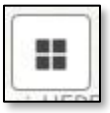
Click this button to open the Print Map dialog.

Enter a title, any desired notes, select an orientation, and click Print. The map will be printed to a new browser tab. Click Generate PDF, and when it completes processing, click Download PDF to download the map PDF to the default browser download location.



Basemap

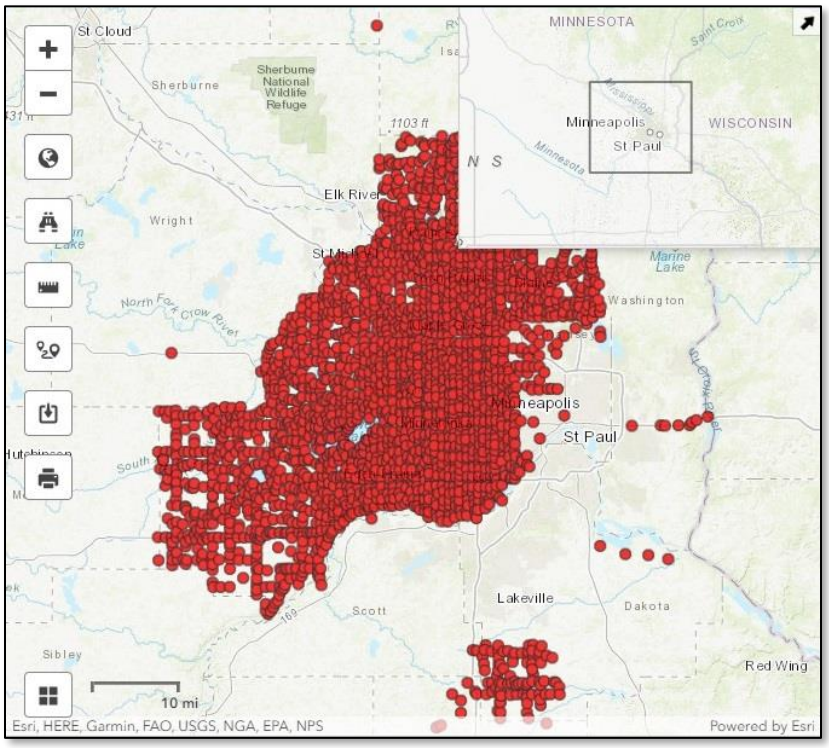
Click this toggle to open the Basemap Selector.



Scroll through this collection of basemaps and select one for the current map by clicking on it. Click the Basemap toggle button once again to close the Basemap Selector

Overview Map

Click the small arrow in the upper right of the map display to open the Overview Map. This Overview shows a zoomed-out display of the map, with the current map extents highlighted. Click the small arrow to minimize the Overview Map.



Charts View

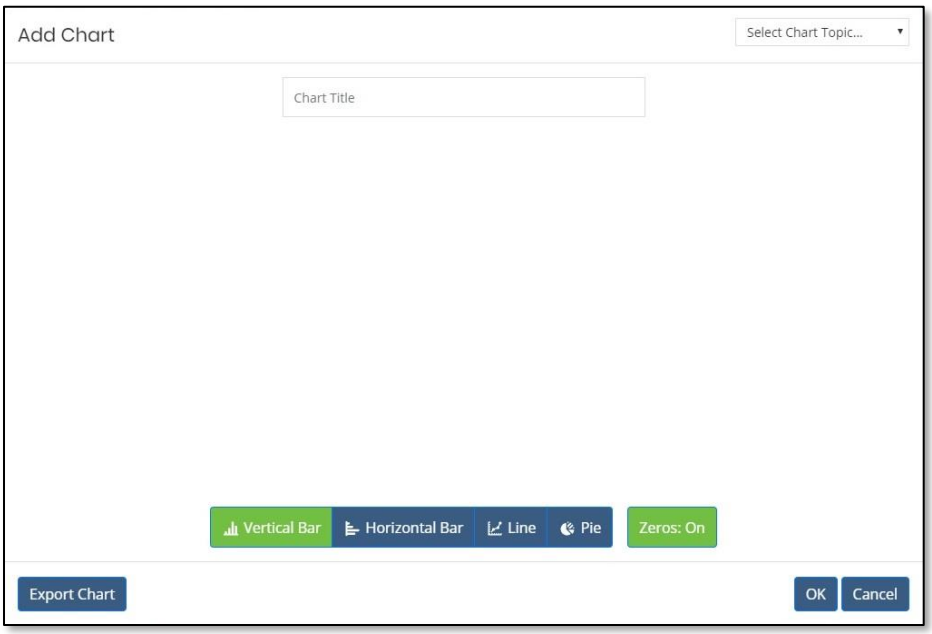
Click the Charts tab to open the Charts View.

Add/Edit Chart

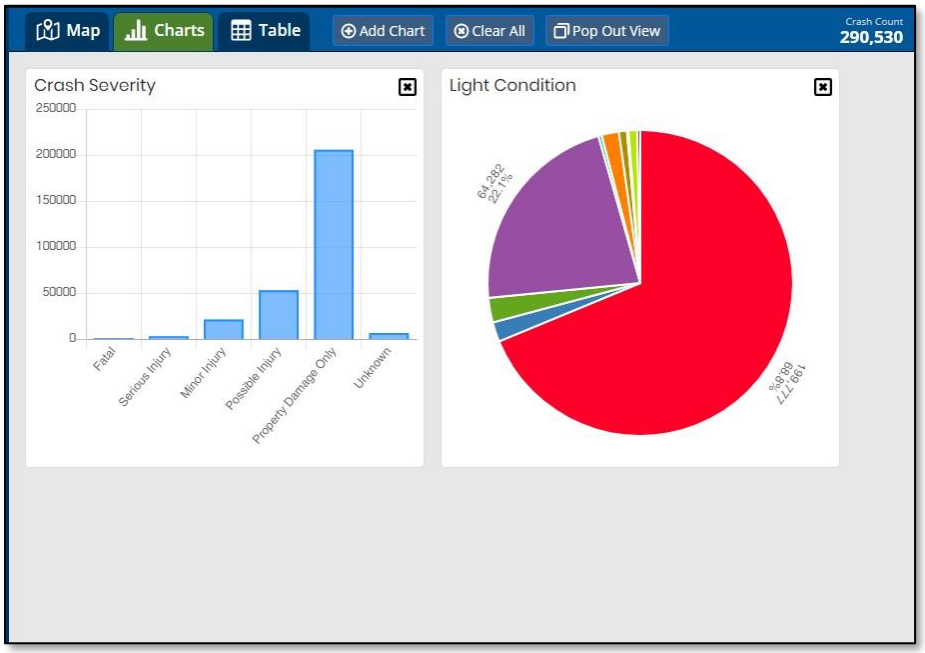
Click Add Chart to open the Add Chart dialog.

Topic List, Title, Chart Types, Export Chart

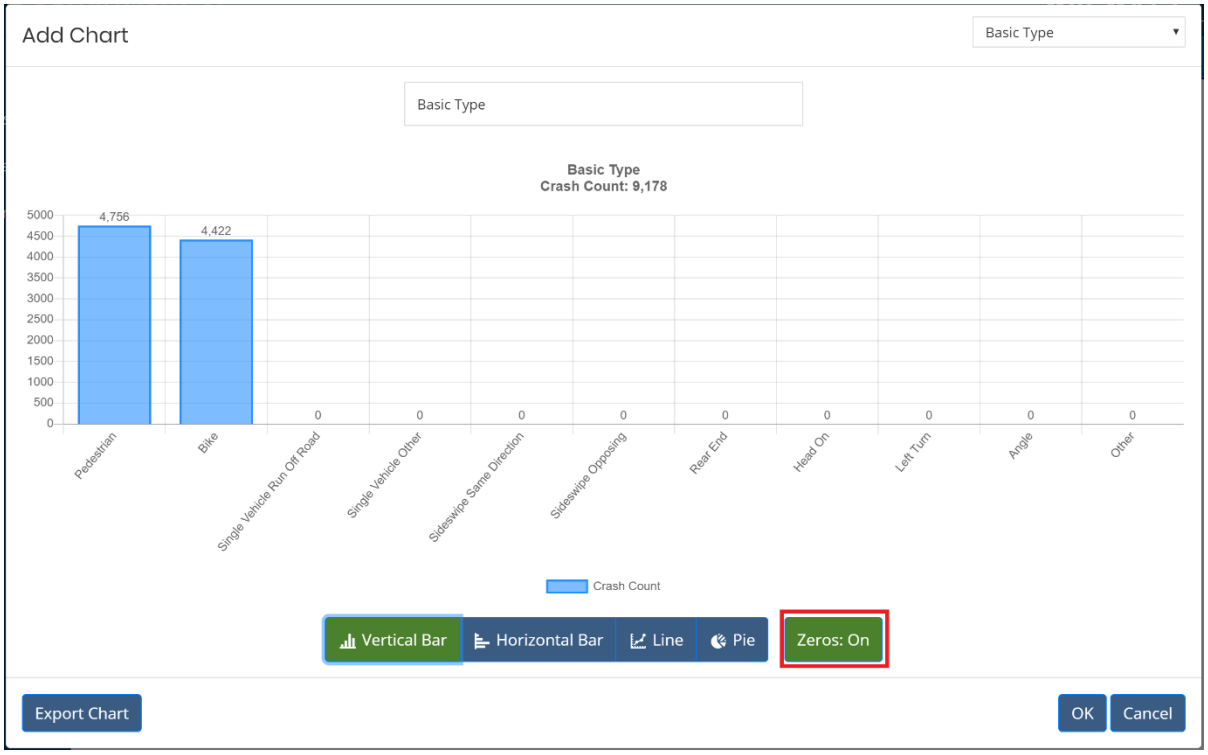
To add a chart, select the type of chart along the bottom, the topic in the upper right drop down list, enter a title, and click OK. To export the chart, click the Export Chart button in the lower left, enter a file name, select PNG or JPG, and click Save. The export will save to the default browser download location.



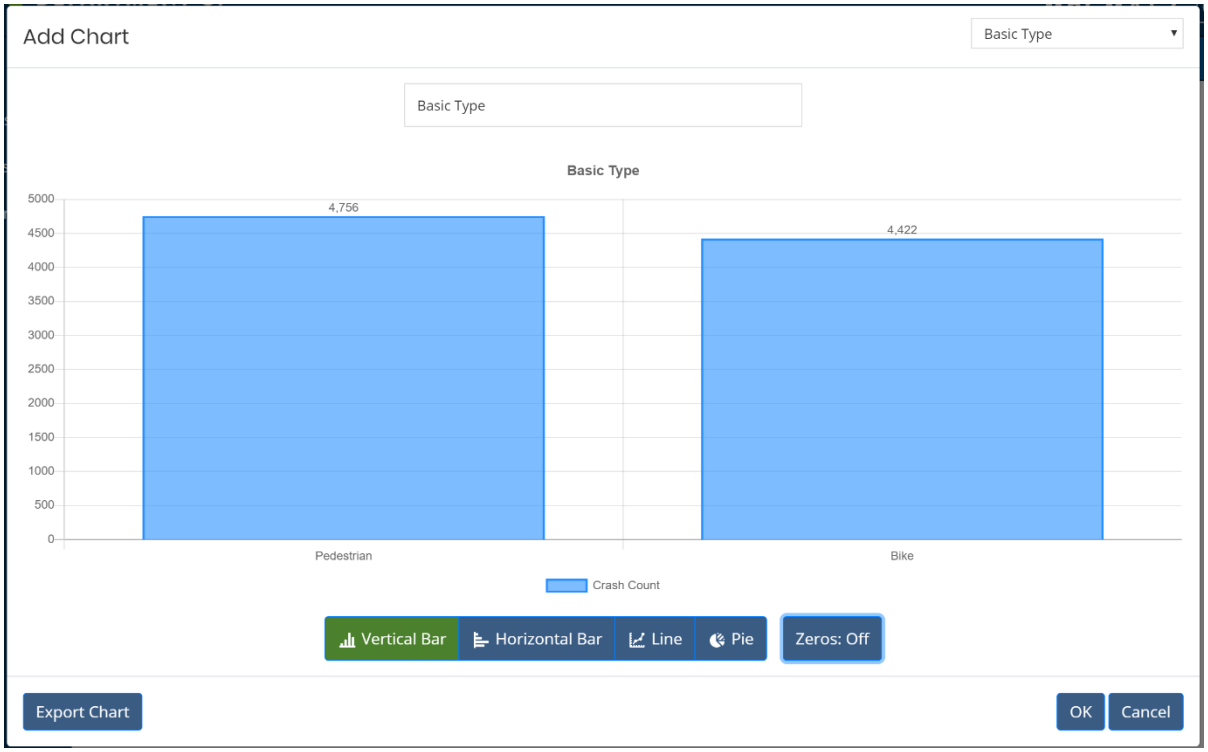
This is an image of the Charts View with charts created. To edit a chart, click on it. To delete it, click the "X" in the upper right of the chart.



For Vertical Bar, Horizontal Bar, and Line charts there is an option for Zeros: On/Off.



Toggling this button will hide any data values in the chart that have a 0 for the value.

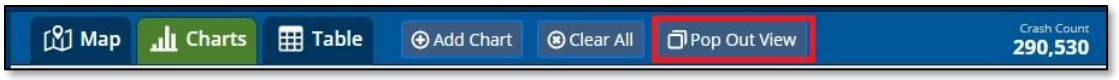


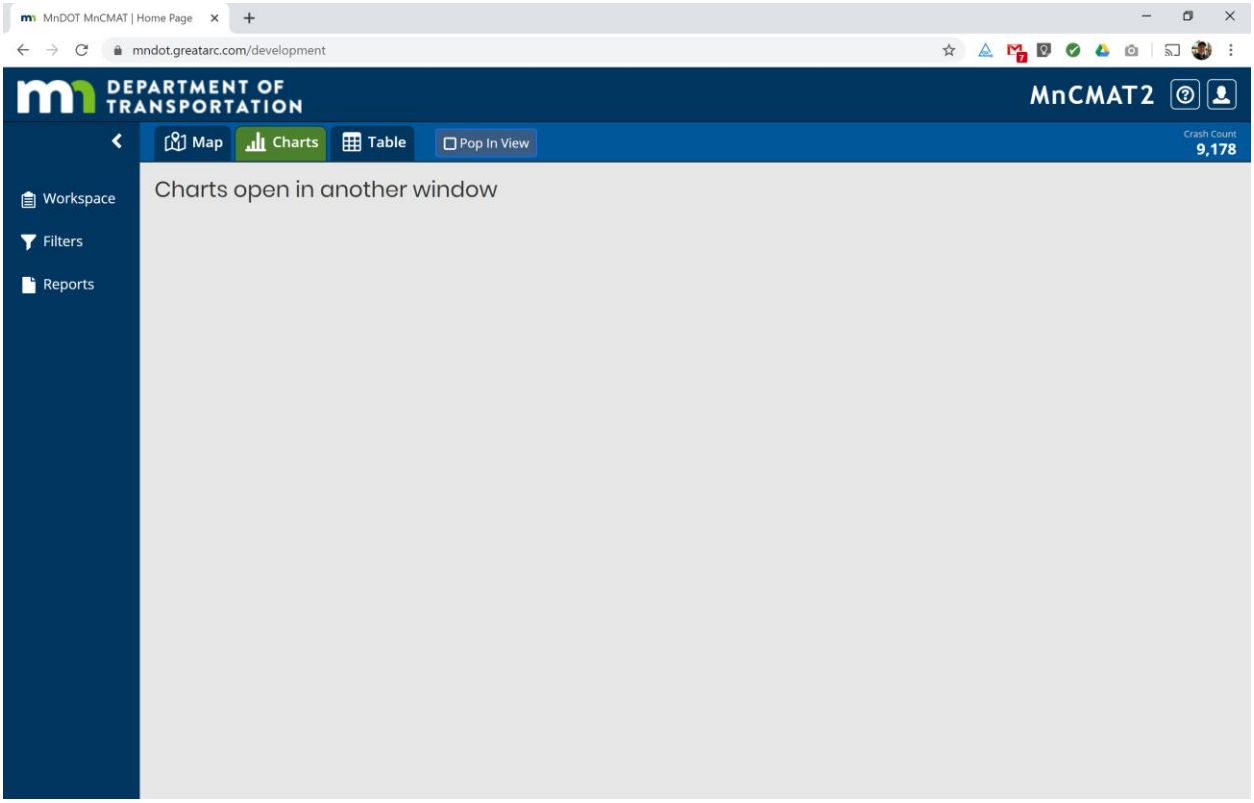
Clear All

Click the Clear All button to clear all charts from the view.

Pop Out View

Clicking the Pop Out View button will open the Charts View in a separate Browser tab or window.



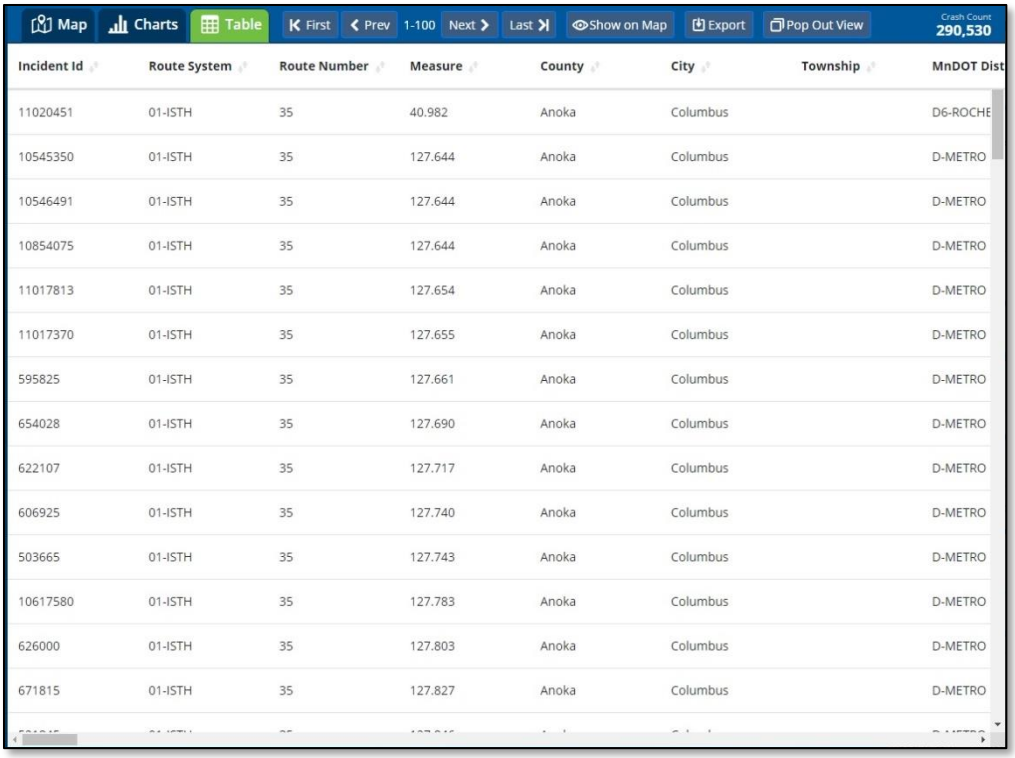


Click Pop In View to return the Chart to the Main Application Window.

Table View

Click the Table tab to open the Table View. This view is a tabular list of all selected crash records.

The results are paged. Clicking on the arrows next to each column name will sort the records based on that column. The default sort order is Route ID, Measure, and Date.



Incident Id	Route System	Route Number	Measure	County	City	Township	MnDOT Dist
11020451	01-ISTH	35	40.982	Anoka	Columbus		D6-ROCHE
10545350	01-ISTH	35	127.644	Anoka	Columbus		D-METRO
10546491	01-ISTH	35	127.644	Anoka	Columbus		D-METRO
10854075	01-ISTH	35	127.644	Anoka	Columbus		D-METRO
11017813	01-ISTH	35	127.654	Anoka	Columbus		D-METRO
11017370	01-ISTH	35	127.655	Anoka	Columbus		D-METRO
595825	01-ISTH	35	127.661	Anoka	Columbus		D-METRO
654028	01-ISTH	35	127.690	Anoka	Columbus		D-METRO
622107	01-ISTH	35	127.717	Anoka	Columbus		D-METRO
606925	01-ISTH	35	127.740	Anoka	Columbus		D-METRO
503665	01-ISTH	35	127.743	Anoka	Columbus		D-METRO
10617580	01-ISTH	35	127.783	Anoka	Columbus		D-METRO
626000	01-ISTH	35	127.803	Anoka	Columbus		D-METRO
671815	01-ISTH	35	127.827	Anoka	Columbus		D-METRO

Table Navigation - First Record, Previous Record, Next Record, Last Record

To navigate through the pages of Table results, use the highlighted navigator buttons – First, Previous, Next, or Last. The range of records on the current page are displayed in the middle of the navigator.

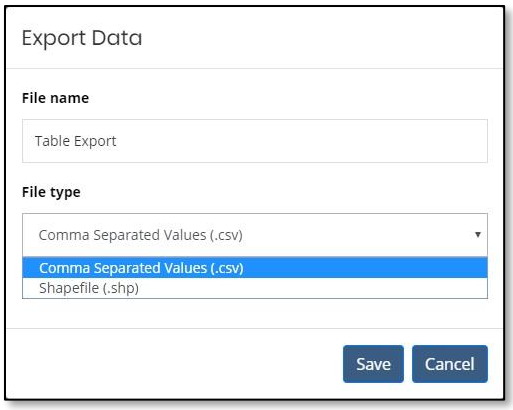
Show on Map

With a record in the table selected, click on Show on Map to bring up the Map View and have it zoom to that crash location and have it briefly highlighted.

Export Table

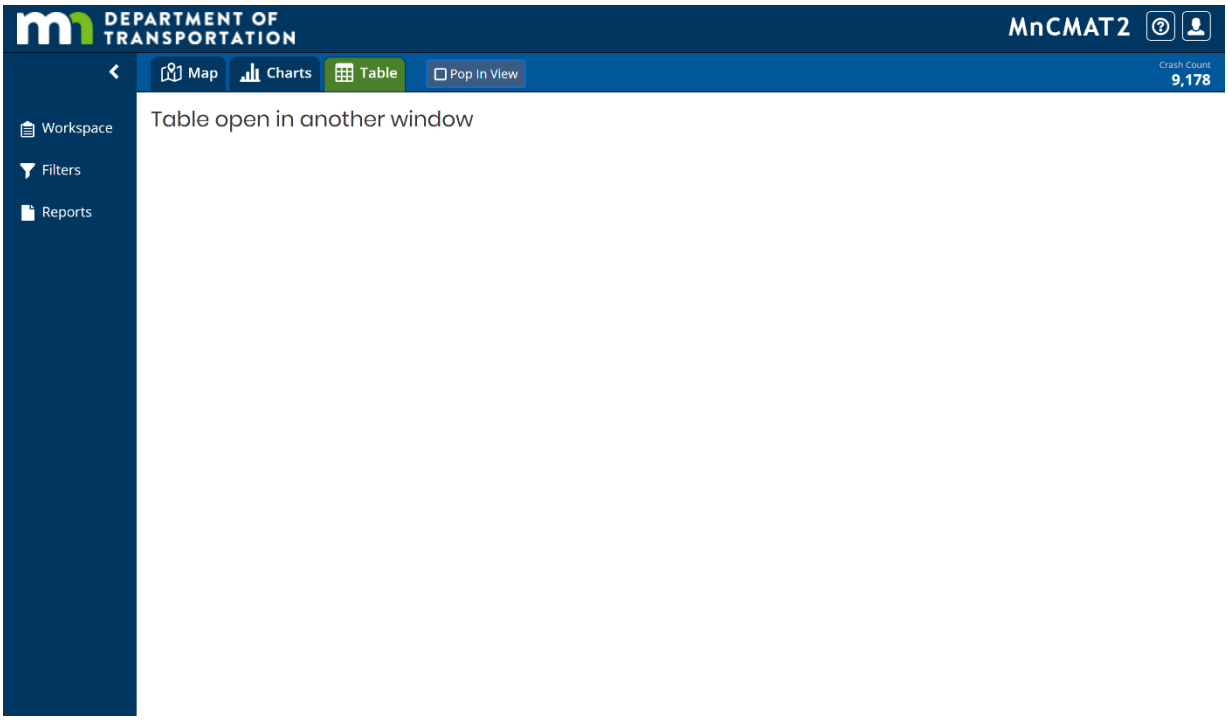
Click on Export to open the Export Data dialog.

Enter a File name, choose the export type – either CSV or Shapefile, and click Save. The file will be saved to the default browser download location.



Pop Out View

Clicking the Pop Out View button will open the Table View in a separate Browser tab or window.



Click Pop In View to return the Table to the Main Application Window.